# breakout ABSTRACT

**TITLE**

EPHT of Childhood Leukemia and Air Toxics for Health and Environment Linked For Information Exchange–Atlanta (HELIX–Atlanta)

**THEME**

Advance Environmental Public Health Science and Research

**KEYWORDS**

HELIX–Atlanta, short-latency cancers, childhood leukemia, childhood cancer, transportation, mobile sources, motor vehicles emissions, vehicle miles traveled, traffic volume, benzene, diesel, air toxics, air quality, Toxic Release Inventory, TRI, National Air Toxics Assessment, NATA, Hazardous Air Pollutants, HAPs, MOBILE6.2, SEER Cancer Registry

**BACKGROUND**

Outdoor air pollution is now recognized as an important problem for susceptible populations. Children are among the most susceptible to adverse health effects of air pollution because of increased exposures due to a higher ventilation rate, levels of physical activity, and time spent outdoors. In several recent investigations, researchers have linked various childhood cancers to the proximity of children's residences to traffic, which is the primary source of air toxics pollution in Metropolitan Atlanta and the majority of urban areas. Childhood leukemias are also the most common cancers in childhood, yet their etiology is not well understood.

**OBJECTIVE(S)**

1) To develop and evaluate methods for the surveillance of childhood leukemia from a Metropolitan Atlanta cancer registry by assessing these cases' exposure to air toxics (e.g. mobile source emissions modeling, National Air Toxics Assessment [NATA], and Toxic Release Inventory [TRI], etc.) 2) To evaluate the utility and sustainability of integrating linked exposure estimates and childhood leukemia into a local EPHT network.

**METHOD(S)**

All childhood leukemias from 1999 and 2000 will be linked geographically to surrogates of exposure at the census tract, based upon yearly birth cohort's population centroids, and annually on a temporal scale. The primary exposure metric of interest is an estimate of grams of benzene per roadway section. This metric is derived from a model [MOBILE6.2] that combines information on vehicle miles traveled, vehicle emission factors, and the roadway network in the Metropolitan Atlanta area. The risk for specific age group categories and areas will be estimated ecologically and based on years of potential exposure by fitting the data with Poisson regression and Bayesian models. Additionally, exposure classification will be validated through comparisons of values assigned to census tracts and case locations within tracts.

## RESULT(S)

All statistical associations and complete evaluation recommendations are pending analyses and project completion. Interim results will focus on the evaluation of available data and the utility of exposure estimates derived using the MOBILE6.2 model.

## DISCUSSION/RECOMMENDATION(S)

Discussion will outline lessons learned so far, assumptions required under different data conditions, limitations of the approach, and interim recommendations for improving the validity of the perceived statistical risk of air-toxics pollution on childhood leukemia.

## AUTHOR(S)

Gabriel Rainisch, M.P.H.
HELIX–Atlanta Cancer Team Chair
Environmental Health Tracking Branch
Centers for Disease Control and Prevention
1600 Clifton Rd., Mail Stop E19
Atlanta, GA 30333
404-498-1341
GRainisch@cdc.gov

Brian Kaplan: bck2@cdc.gov
Maudood Kahn: maudood_khan@dnr.state.ga.us
Dale Quattrochi: Dale.Quattrochi@msfc.nasa.gov
Ravi Rao: Rao.Ravi@epamail.epa.gov
Kevin Ward: kward@sph.emory.edu
Amanda Sue Niskar: abn0@cdc.gov